SEQUENCE LISTING

<110> Messier, Walter
Sikela, James M

<120> Methods to Identify Polynucleotide and Polypeptide Sequences Which May Be Associated with Physiological and Medical Conditions

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<151> 2000-06-09

<150> 09/240,915
<151> 1999-01-29

<150> 60/073,263
<151> 1998-01-30

<150> 60/098,987
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Val Gln Val Thr Cys Ser Thr Ser Cys Asp Gln Pro Asp Leu Leu Gly
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ata gag acc ccg ttg cct aaa aag gag ttg ctt ctg ggt ggg aac aac 144
Ile Glu Thr Pro Leu Pro Lys Lys Glu Leu Leu Leu Gly Gly Asn Asn
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Trp Lys Val Tyr Glu Leu Ser Asn Val Gln Glu Asp Ser Gln Pro Met
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Cys Tyr Ser Asn Cys Pro Asp Gly Gln Ser Thr Ala Lys Thr Phe Leu
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Thr Val Tyr Trp Thr Pro Glu Arg Val Glu Leu Ala Pro Leu Pro Ser
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Trp Gln Pro Val Gly Lys Asp Leu Thr Leu Arg Cys Gln Val Glu Gly
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Gly Ala Pro Arg Ala Asn Leu Thr Val Val Leu Leu Arg Gly Glu Lys
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Glu Leu Lys Arg Glu Pro Ala Val Gly Glu Pro Ala Glu Val Thr Thr
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Val Cys Ser Leu Asp Gly Leu Phe Pro Val Ser Glu Ala Gln Val His
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ctg gca ctg ggg gac cag agg ttg aac ccc aca gtc acc tat ggc aat   720
Leu Ala Leu Gly Asp Gln Arg Leu Asn Pro Thr Val Thr Tyr Gly Asn
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gac tcc ttc tcg gcc aag gcc tca gtc agt gtg acc gca gag gac gag   768
Asp Ser Phe Ser Ala Lys Ala Ser Val Ser Val Thr Ala Glu Asp Glu
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ggc acc cag cgg ctg acg tgt gca gta ata ctg ggg aac cag agc cgg   816
Gly Thr Gln Arg Leu Thr Cys Ala Val Ile Leu Gly Asn Gln Ser Arg
            260                 265                 270

gag aca ctg cag aca gtg acc atc tac agc ttt ccg gcg ccc aac gtg   864
Glu Thr Leu Gln Thr Val Thr Ile Tyr Ser Phe Pro Ala Pro Asn Val
        275                 280                 285

att ctg acg aag cca gag gtc tca gaa ggg acc gag gtg aca gtg aag   912
Ile Leu Thr Lys Pro Glu Val Ser Glu Gly Thr Glu Val Thr Val Lys
    290                 295                 300

tgt gag gcc cac cct aga gcc aag gtg acg ctg aat ggg gtt cca gcc   960
Cys Glu Ala His Pro Arg Ala Lys Val Thr Leu Asn Gly Val Pro Ala
305                 310                 315                 320

cag cca gtg ggc ccg agg gtc cag ctc ctg ctg aag gcc acc cca gag   1008
Gln Pro Val Gly Pro Arg Val Gln Leu Leu Leu Lys Ala Thr Pro Glu
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gac aac ggg cgc agc ttc tcc tgc tct gca acc ctg gag gtg gcc ggc   1056
Asp Asn Gly Arg Ser Phe Ser Cys Ser Ala Thr Leu Glu Val Ala Gly
            340                 345                 350

cag ctt ata cac aag aac cag acc cgg gag ctt cgt gtc ctg tat ggc   1104
Gln Leu Ile His Lys Asn Gln Thr Arg Glu Leu Arg Val Leu Tyr Gly
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ccc cga ctg gac gag agg gat tgt ccg gga aac tgg acg tgg cca gaa   1152
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Asn Ser Gln Gln Thr Pro Met Cys Gln Ala Ser Gly Asn Pro Leu Pro
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gag ctc aag tgt cta aag gat ggc act ttc cca ctg ccc gtc ggg gaa   1248
Glu Leu Lys Cys Leu Lys Asp Gly Thr Phe Pro Leu Pro Val Gly Glu
                405                 410                 415

tca gtg act gtc act cga gat ctt gag ggc acc tac ctc tgt cgg gcc   1296
Ser Val Thr Val Thr Arg Asp Leu Glu Gly Thr Tyr Leu Cys Arg Ala
            420                 425                 430

agg agc act caa ggg gag gtc acc cgc aag gtg acc gtg aat gtg ctc   1344
Arg Ser Thr Gln Gly Glu Val Thr Arg Lys Val Thr Val Asn Val Leu
        435                 440                 445

tcc ccc cgg tat gag att gtc atc atc act gtg gta gca gcc gca gtc   1392
Ser Pro Arg Tyr Glu Ile Val Ile Ile Thr Val Val Ala Ala Ala Val
    450                 455                 460

ata atg ggc act gca ggc ctc agc acg tac ctc tat aac cgc cag cgg   1440
Ile Met Gly Thr Ala Gly Leu Ser Thr Tyr Leu Tyr Asn Arg Gln Arg
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aag atc agg aaa tac aga cta caa cag gct caa aaa ggg acc ccc atg   1488
Lys Ile Arg Lys Tyr Arg Leu Gln Gln Ala Gln Lys Gly Thr Pro Met
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Cys Tyr Ser Asn Cys Pro Asp Gly Gln Ser Thr Ala Lys Thr Phe Leu
65                  70                  75                  80

Thr Val Tyr Trp Thr Pro Glu Arg Val Glu Leu Ala Pro Leu Pro Ser
                85                  90                  95

Trp Gln Pro Val Gly Lys Asp Leu Thr Leu Arg Cys Gln Val Glu Gly
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Gly Ala Pro Arg Ala Asn Leu Thr Val Val Leu Leu Arg Gly Glu Lys
        115                 120                 125

Glu Leu Lys Arg Glu Pro Ala Val Gly Glu Pro Ala Glu Val Thr Thr
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Thr Val Leu Val Glu Arg Asp His His Gly Ala Asn Phe Ser Cys Arg
145                 150                 155                 160

Thr Glu Leu Asp Leu Arg Pro Gln Gly Leu Gln Leu Phe Glu Asn Thr
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Ser Ala Pro His Gln Leu Gln Thr Phe Val Leu Pro Ala Thr Pro Pro
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Gln Leu Val Ser Pro Arg Val Leu Glu Val Asp Thr Gln Gly Thr Val
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Val Cys Ser Leu Asp Gly Leu Phe Pro Val Ser Glu Ala Gln Val His
    210                 215                 220

Leu Ala Leu Gly Asp Gln Arg Leu Asn Pro Thr Val Thr Tyr Gly Asn
225                 230                 235                 240

Asp Ser Phe Ser Ala Lys Ala Ser Val Ser Val Thr Ala Glu Asp Glu
                245                 250                 255

Gly Thr Gln Arg Leu Thr Cys Ala Val Ile Leu Gly Asn Gln Ser Arg
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Glu Thr Leu Gln Thr Val Thr Ile Tyr Ser Phe Pro Ala Pro Asn Val
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Asp Asn Gly Arg Ser Phe Ser Cys Ser Ala Thr Leu Glu Val Ala Gly
            340                 345                 350

Gln Leu Ile His Lys Asn Gln Thr Arg Glu Leu Arg Val Leu Tyr Gly
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Pro Arg Leu Asp Glu Arg Asp Cys Pro Gly Asn Trp Thr Trp Pro Glu
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Asn Ser Gln Gln Thr Pro Met Cys Gln Ala Ser Gly Asn Pro Leu Pro
385                 390                 395                 400

Glu Leu Lys Cys Leu Lys Asp Gly Thr Phe Pro Leu Pro Val Gly Glu
                405                 410                 415

Ser Val Thr Val Thr Arg Asp Leu Glu Gly Thr Tyr Leu Cys Arg Ala
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Arg Ser Thr Gln Gly Glu Val Thr Arg Lys Val Thr Val Asn Val Leu
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Ser Pro Arg Tyr Glu Ile Val Ile Ile Thr Val Val Ala Ala Ala Val
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Ile Met Gly Thr Ala Gly Leu Ser Thr Tyr Leu Tyr Asn Arg Gln Arg
465                 470                 475                 480

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gaggtcacga ccacggtgcc ggtggagaaa gatcaccatg gagccaattt cttgtgccgc 480

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gcagccgcag tcataatggg cactgcaggc ctcagcacgt acctctataa ccgccagcgg 1440

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Arg Lys Val Tyr Glu Leu Ser Asn Val Gln Glu Asp Ser Gln Pro Met
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Cys Tyr Ser Asn Cys Pro Asp Gly Gln Ser Thr Ala Lys Thr Phe Leu
65 70 75 80

Thr Val Tyr Trp Thr Pro Glu Arg Val Glu Leu Ala Pro Leu Pro Ser
85 90 95

Trp Gln Pro Val Gly Lys Asn Leu Thr Leu Arg Cys Gln Val Glu Gly
100 105 110

Gly Ala Pro Arg Ala Asn Leu Thr Val Val Leu Leu Arg Gly Glu Lys
115 120 125

Glu Leu Lys Arg Glu Pro Ala Val Gly Glu Pro Ala Glu Val Thr Thr

130 135 140

Thr Val Leu Val Arg Arg Asp His His Gly Ala Asn Phe Ser Cys Arg
145 150 155 160

Thr Glu Leu Asp Leu Arg Pro Gln Gly Leu Glu Leu Phe Glu Asn Thr
165 170 175

Ser Ala Pro Tyr Gln Leu Gln Thr Phe Val Leu Pro Ala Thr Pro Pro
180 185 190

Gln Leu Val Ser Pro Arg Val Leu Glu Val Asp Thr Gln Gly Thr Val
195 200 205

Val Cys Ser Leu Asp Gly Leu Phe Pro Val Ser Glu Ala Gln Val His
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Leu Ala Leu Gly Asp Gln Arg Leu Asn Pro Thr Val Thr Tyr Gly Asn
225 230 235 240

Asp Ser Phe Ser Ala Lys Ala Ser Val Ser Val Thr Ala Glu Asp Glu
245 250 255

Gly Thr Gln Arg Leu Thr Cys Ala Val Ile Leu Gly Asn Gln Ser Gln
260 265 270

Glu Thr Leu Gln Thr Val Thr Ile Tyr Ser Phe Pro Ala Pro Asn Val
275 280 285

Ile Leu Thr Lys Pro Glu Val Ser Glu Gly Thr Glu Val Thr Val Lys
290 295 300

Cys Glu Ala His Pro Arg Ala Lys Val Thr Leu Asn Gly Val Pro Ala
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Asp Asn Gly Arg Ser Phe Ser Cys Ser Ala Thr Leu Glu Val Ala Gly
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Gln Leu Ile His Lys Asn Gln Thr Arg Glu Leu Arg Val Leu Tyr Gly
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385 390 395 400

Glu Leu Lys Cys Leu Lys Asp Gly Thr Phe Pro Leu Pro Ile Gly Glu
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Arg Ser Thr Gln Gly Glu Val Thr Arg Glu Val Thr Val Asn Val Leu
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Ser Pro Arg Tyr Glu Ile Val Ile Ile Thr Val Val Ala Ala Ala Val
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Ile Met Gly Thr Ala Gly Leu Ser Thr Tyr Leu Tyr Asn Arg Gln Arg
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Asp Glu Gln Ala Gln Trp Lys His Tyr Leu Val Ser Asn Ile Ser His
50 55 60

Asp Thr Val Leu Gln Cys His Phe Thr Cys Ser Gly Lys Gln Glu Ser
65 70 75 80

Met Asn Ser Asn Val Ser Val Tyr Gln Pro Pro Arg Gln Val Ile Leu
85 90 95

Thr Leu Gln Pro Thr Leu Val Ala Val Gly Lys Ser Phe Thr Ile Glu
100 105 110

Cys Arg Val Pro Thr Val Glu Pro Leu Asp Ser Leu Thr Leu Phe Leu
115 120 125

Phe Arg Gly Asn Glu Thr Leu His Tyr Glu Thr Phe Gly Lys Ala Ala
130 135 140

Pro Ala Pro Gln Glu Ala Thr Ala Thr Phe Asn Ser Thr Ala Asp Arg
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Glu Asp Gly His Arg Asn Phe Ser Cys Leu Ala Val Leu Asp Leu Met
165 170 175

Ser Arg Gly Gly Asn Ile Phe His Lys His Ser Ala Pro Lys Met Leu
180 185 190

Glu Ile Tyr Glu Pro Val Ser Asp Ser Gln Met Val Ile Ile Val Thr
195 200 205

Val Val Ser Val Leu Leu Ser Leu Phe Val Thr Ser Val Leu Leu Cys
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Met Gly Trp Ala Ala Phe Asn Leu Ser Asn Val Thr Gly Asn Ser Arg
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Ile Leu Cys Ser Val Tyr Cys Asn Gly Ser Gln Ile Thr Gly Ser Ser
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Asn Ile Thr Val Tyr Gly Leu Pro Glu Arg Val Glu Leu Ala Pro Leu
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100 105 110

Glu Gly Gly Ser Pro Arg Thr Ser Leu Thr Val Val Leu Leu Arg Trp
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165 170 175

Asn Thr Ser Ala Pro Arg Gln Leu Arg Thr Phe Val Leu Pro Val Thr
180 185 190

Pro Pro Arg Leu Val Ala Pro Arg Phe Leu Glu Val Glu Thr Ser Trp
195 200 205

Pro Val Asp Cys Thr Leu Asp Gly Leu Phe Pro Ala Ser Glu Ala Gln
210 215 220

Val Tyr Leu Ala Leu Gly Asp Gln Met Leu Asn Ala Thr Val Met Asn
225 230 235 240

His Gly Asp Thr Leu Thr Ala Thr Ala Thr Ala Thr Ala Arg Ala Asp
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Gln Glu Gly Ala Arg Glu Ile Val Cys Asn Val Thr Leu Gly Gly Glu
260 265 270

Arg Arg Glu Ala Arg Glu Asn Leu Thr Val Phe Ser Phe Leu Gly Pro
275 280 285

Ile Val Asn Leu Ser Glu Pro Thr Ala His Glu Gly Ser Thr Val Thr
290 295 300

Val Ser Cys Met Ala Gly Ala Arg Val Gln Val Thr Leu Asp Gly Val
305 310 315 320

Replacement Sheet

Pro Ala Ala Ala Pro Gly Gln Pro Ala Gln Leu Gln Leu Asn Ala Thr
325 330 335

Glu Ser Asp Asp Gly Arg Ser Phe Phe Cys Ser Ala Thr Leu Glu Val
340 345 350

Asp Gly Glu Phe Leu His Arg Asn Ser Ser Val Gln Leu Arg Val Leu
355 360 365

Tyr Gly Pro Lys Ile Asp Arg Ala Thr Cys Pro Gln His Leu Lys Trp
370 375 380

Lys Asp Lys Thr Arg His Val Leu Gln Cys Gln Ala Arg Gly Asn Pro
385 390 395 400

Tyr Pro Glu Leu Arg Cys Leu Lys Glu Gly Ser Ser Arg Glu Val Pro
405 410 415

Val Gly Ile Pro Phe Phe Val Asn Val Thr His Asn Gly Thr Tyr Gln
420 425 430

Cys Gln Ala Ser Ser Ser Arg Gly Lys Tyr Thr Leu Val Val Val Met
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Asp Ile Glu Ala Gly Ser Ser His Phe Val Pro Val Phe Val Ala Val
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Leu Leu Thr Leu Gly Val Val Thr Ile Val Leu Ala Leu Met Tyr Val
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Phe Arg Glu His Gln Arg Ser Gly Ser Tyr His Val Arg Glu Glu Ser
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Asn Asp Val Thr Thr Arg Leu Arg Glu Asn Glu Leu Thr Tyr Tyr Cys
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Cys Lys Lys Asp Leu Cys Asn Phe Asn Glu Gln Leu Glu Asn Gly Gly
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Lys Asp Leu Thr Thr Arg Leu Arg Glu Asn Glu Leu Thr Tyr Tyr Cys
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Cys Lys Lys Asp Leu Cys Asn Phe Asn Glu Gln Leu Glu Asn Gly Gly
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Arg Val Ala Glu Ser Met Ala Pro Asp Pro Arg Thr Leu Gln Arg Met
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gcc tgt gag gtg gcc tgt ggc gtc ctg cac ctt cat cgc aac aat ttc 658
Ala Cys Glu Val Ala Cys Gly Val Leu His Leu His Arg Asn Asn Phe
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Val His Ser Asp Leu Ala Leu Arg Asn Cys Leu Leu Thr Ala Asp Leu
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Thr Val Lys Ile Gly Asp Tyr Gly Leu Ala His Cys Lys Tyr Arg Glu
100 105 110

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Asp Tyr Phe Val Thr Ala Asp Gln Leu Trp Val Pro Leu Arg Trp Ile
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gcg cca gag ctg gtg gac gag gtg cat agc aac ctg ctc gtc gtg gac   850
Ala Pro Glu Leu Val Asp Glu Val His Ser Asn Leu Leu Val Val Asp
                135                 140                 145

cag acc aag agc ggg aat gtg tgg tcc ctg ggc gtg acc atc tgg gag   898
Gln Thr Lys Ser Gly Asn Val Trp Ser Leu Gly Val Thr Ile Trp Glu
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ctc ttt gag ctg ggc acg cag ccc tat ccc cag cac tcg gac cag cag   946
Leu Phe Glu Leu Gly Thr Gln Pro Tyr Pro Gln His Ser Asp Gln Gln
        165                 170                 175

gtg ctg gcg tac acg gtc cgg gag cag cag ctc aag ctg ccc aag ccc   994
Val Leu Ala Tyr Thr Val Arg Glu Gln Gln Leu Lys Leu Pro Lys Pro
    180                 185                 190

cag ctg cag ctg acc ctg tcg gac cgc tgg tac gag gtg atg cag ttc   1042
Gln Leu Gln Leu Thr Leu Ser Asp Arg Trp Tyr Glu Val Met Gln Phe
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tgc tgg ctg cag ccc gag cag cgg ccc aca gcc gag gag gtg cac ctg   1090
Cys Trp Leu Gln Pro Glu Gln Arg Pro Thr Ala Glu Glu Val His Leu
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ctg ctg tcc tac ctg tgt gcc aag ggc gcc acc gaa gca gag gag gag   1138
Leu Leu Ser Tyr Leu Cys Ala Lys Gly Ala Thr Glu Ala Glu Glu Glu
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ttt gaa cgg cgc tgg cgc tct ctg cgg ccc ggc ggg ggc ggc gtg ggg   1186
Phe Glu Arg Arg Trp Arg Ser Leu Arg Pro Gly Gly Gly Gly Val Gly
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ccc ggg ccc ggt gcg gcg ggg ccc atg ctg ggc ggc gtg gtg gag ctc   1234
Pro Gly Pro Gly Ala Ala Gly Pro Met Leu Gly Gly Val Val Glu Leu
    260                 265                 270

gcc gct gcc tcg tcc ttc ccg ctg ctg gag cag ttc gcg ggc gac ggc   1282
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Phe Pro Ala Thr Leu Ser Pro Gly Arg Thr Ala Arg Leu Gln Glu Leu
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tgc gcc ccc gac ggc gcg ccc ccg ggc gtg gtt ccg gtg ctc agc gcg   1474
Cys Ala Pro Asp Gly Ala Pro Pro Gly Val Val Pro Val Leu Ser Ala
    340                 345                 350

cac agc ccg tcg ctg ggc agc gag tac ttc atc cgc cta gag gag gcc   1522
His Ser Pro Ser Leu Gly Ser Glu Tyr Phe Ile Arg Leu Glu Glu Ala
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Ala Pro Ala Ala Gly His Asp Pro Asp Cys Ala Gly Cys Ala Pro Ser
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cca cct gcc acc gcg gac cag gac gac gac tct gac ggc agc acc gcc   1618
Pro Pro Ala Thr Ala Asp Gln Asp Asp Asp Ser Asp Gly Ser Thr Ala
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Ala Ser Leu Ala Met Glu Pro Leu Leu Gly His Gly Pro Pro Val Asp
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gtc ccc tgg ggc cgc ggc gac cac tac cct cgc aga agc ttg gcg cgg   1714
Val Pro Trp Gly Arg Gly Asp His Tyr Pro Arg Arg Ser Leu Ala Arg
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Asp Pro Leu Cys Pro Ser Arg Ser Pro Ser Pro Ser Ala Gly Pro Leu
435                 440                 445                 450

agt ctg gcg gag gga gga gcg gag gat gca gac tgg ggc gtg gcc gcc   1810
Ser Leu Ala Glu Gly Gly Ala Glu Asp Ala Asp Trp Gly Val Ala Ala
                455                 460                 465

ttc tgt cct gcc ttc ttc gag gac cca ctg ggc acg tcc cct ttg ggg   1858
Phe Cys Pro Ala Phe Phe Glu Asp Pro Leu Gly Thr Ser Pro Leu Gly
            470                 475                 480

agc tca ggg gcg ccc ccg ctg ccg ctg act ggc gag gat gag cta gag   1906
Ser Ser Gly Ala Pro Pro Leu Pro Leu Thr Gly Glu Asp Glu Leu Glu
        485                 490                 495
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gag gtg gga gcg cgg agg gcc gcc cag cgc ggg cac tgg cgc tcc aac   1954
Glu Val Gly Ala Arg Arg Ala Ala Gln Arg Gly His Trp Arg Ser Asn
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gtg tca gcc aac aac aac agc ggc agc cgc tgt cca gag tcc tgg gac   2002
Val Ser Ala Asn Asn Asn Ser Gly Ser Arg Cys Pro Glu Ser Trp Asp
515                 520                 525                 530

ccc gtc tct gcg ggc tgc cac gct gag ggc tgc ccc agt cca aag cag   2050
Pro Val Ser Ala Gly Cys His Ala Glu Gly Cys Pro Ser Pro Lys Gln
                535                 540                 545

acc cca cgg gcc tcc ccc gag ccg ggg tac cct gga gag cct ctg ctt   2098
Thr Pro Arg Ala Ser Pro Glu Pro Gly Tyr Pro Gly Glu Pro Leu Leu
            550                 555                 560

ggg ctc cag gca gcc tct gcc cag gag cca ggc tgc tgc ccc ggc ctc   2146
Gly Leu Gln Ala Ala Ser Ala Gln Glu Pro Gly Cys Cys Pro Gly Leu
        565                 570                 575

cct cat cta tgc tct gcc cag ggc ctg gca cct gct ccc tgc ctg gtt   2194
Pro His Leu Cys Ser Ala Gln Gly Leu Ala Pro Ala Pro Cys Leu Val
    580                 585                 590

aca ccc tcc tgg aca gag aca gcc agt agt ggg ggt gac cac ccg cag   2242
Thr Pro Ser Trp Thr Glu Thr Ala Ser Ser Gly Gly Asp His Pro Gln
595                 600                 605                 610

gca gag ccc aag ctt gcc acg gag gct gag ggc act acc gga ccc cgc   2290
Ala Glu Pro Lys Leu Ala Thr Glu Ala Glu Gly Thr Thr Gly Pro Arg
                615                 620                 625

ctg ccc ctt cct tcc gtc ccc tcc cca tcc cag gag gga gcc cca ctt   2338
Leu Pro Leu Pro Ser Val Pro Ser Pro Ser Gln Glu Gly Ala Pro Leu
            630                 635                 640

ccc tcg gag gag gcc agt gcc ccc gac gcc cct gat gcc ctg cct gac   2386
Pro Ser Glu Glu Ala Ser Ala Pro Asp Ala Pro Asp Ala Leu Pro Asp
        645                 650                 655

tct ccc acg cct gct act ggt ggc gag gtg tct gcc atc aag ctg gct   2434
Ser Pro Thr Pro Ala Thr Gly Gly Glu Val Ser Ala Ile Lys Leu Ala
    660                 665                 670

tct gcc ctg aat ggc agc agc agc tct ccc gag gtg gag gca ccc agc   2482
Ser Ala Leu Asn Gly Ser Ser Ser Ser Pro Glu Val Glu Ala Pro Ser
675                 680                 685                 690
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agt gag gat gag gac acg gct gag gcc acc tca ggc atc ttc acc gac   2530
Ser Glu Asp Glu Asp Thr Ala Glu Ala Thr Ser Gly Ile Phe Thr Asp
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acg tcc agc gac ggc ctg cag gcc agg agg ccg gat gtg gtg cca gcc   2578
Thr Ser Ser Asp Gly Leu Gln Ala Arg Arg Pro Asp Val Val Pro Ala
            710                 715                 720

ttc cgc tct ctg cag aag cag gtg ggg acc ccc gac tcc ctg gac tcc   2626
Phe Arg Ser Leu Gln Lys Gln Val Gly Thr Pro Asp Ser Leu Asp Ser
        725                 730                 735

ctg gac atc ccg tcc tca gcc agt gat ggt ggc tat gag gtc ttc agc   2674
Leu Asp Ile Pro Ser Ser Ala Ser Asp Gly Gly Tyr Glu Val Phe Ser
    740                 745                 750

ccg tcg gcc act ggc ccc tct gga ggg cag ccg cga gcg ctg gac agt   2722
Pro Ser Ala Thr Gly Pro Ser Gly Gly Gln Pro Arg Ala Leu Asp Ser
755                 760                 765                 770

ggc tat gac acc gag aac tat gag tcc cct gag ttt gtg ctc aag gag   2770
Gly Tyr Asp Thr Glu Asn Tyr Glu Ser Pro Glu Phe Val Leu Lys Glu
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gcg cag gaa ggg tgt gag ccc cag gcc ttt gcg gag ctg gcc tca gag   2818
Ala Gln Glu Gly Cys Glu Pro Gln Ala Phe Ala Glu Leu Ala Ser Glu
            790                 795                 800

ggt gag ggc ccc ggg ccc gag aca cgg ctc tcc acc tcc ctc agt ggc   2866
Gly Glu Gly Pro Gly Pro Glu Thr Arg Leu Ser Thr Ser Leu Ser Gly
        805                 810                 815

ctc aac gag aag aat ccc tac cga gac tct gcc tac ttc tca gac ctc   2914
Leu Asn Glu Lys Asn Pro Tyr Arg Asp Ser Ala Tyr Phe Ser Asp Leu
    820                 825                 830

gag gct gag gcc gag gcc acc tca ggc cca gag aag aag tgc ggc ggg   2962
Glu Ala Glu Ala Glu Ala Thr Ser Gly Pro Glu Lys Lys Cys Gly Gly
835                 840                 845                 850

gac cga gcc ccc ggg cca gag ctg ggc ctg ccg agc act ggg cag ccg   3010
Asp Arg Ala Pro Gly Pro Glu Leu Gly Leu Pro Ser Thr Gly Gln Pro
                855                 860                 865

tct gag cag gtc tgt ctc agg cct ggg gtt tcc ggg gag gca caa ggc   3058
Ser Glu Gln Val Cys Leu Arg Pro Gly Val Ser Gly Glu Ala Gln Gly
            870                 875                 880
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tct ggc ccc ggg gag gtg ctg ccc cca ctg ctg cag ctt gaa ggg tcc   3106
Ser Gly Pro Gly Glu Val Leu Pro Pro Leu Leu Gln Leu Glu Gly Ser
        885                 890                 895

tcc cca gag ccc agc acc tgc ccc tcg ggc ctg gtc cca gag cct ccg   3154
Ser Pro Glu Pro Ser Thr Cys Pro Ser Gly Leu Val Pro Glu Pro Pro
    900                 905                 910

gag ccc caa ggc cca gcc aag gtg cgg cct ggg ccc agc ccc agc tgc   3202
Glu Pro Gln Gly Pro Ala Lys Val Arg Pro Gly Pro Ser Pro Ser Cys
915                 920                 925                 930

tcc cag ttt ttc ctg ctg acc ccg gtt ccg ctg aga tca gaa ggc aac   3250
Ser Gln Phe Phe Leu Leu Thr Pro Val Pro Leu Arg Ser Glu Gly Asn
                935                 940                 945

agc tct gag ttc cag ggg ccc cca gga ctg ttg tca ggg ccg gcc cca   3298
Ser Ser Glu Phe Gln Gly Pro Pro Gly Leu Leu Ser Gly Pro Ala Pro
            950                 955                 960

caa aag cgg atg ggg ggc cca ggc acc ccc aga gcc cca ctc cgc ctg   3346
Gln Lys Arg Met Gly Gly Pro Gly Thr Pro Arg Ala Pro Leu Arg Leu
        965                 970                 975

gct ctg ccc ggc ctc cct gcg gcc ttg gag ggc cgg ccg gag gag gag   3394
Ala Leu Pro Gly Leu Pro Ala Ala Leu Glu Gly Arg Pro Glu Glu Glu
    980                 985                 990

gag gag gac agt gag gac agc gac gag tct gac gag gag ctc cgc tgc   3442
Glu Glu Asp Ser Glu Asp Ser Asp Glu Ser Asp Glu Glu Leu Arg Cys
995                1000                1005                1010

tac agc gtc cag gag cct agc gag gac agc gaa gag gag gcg ccg gcg   3490
Tyr Ser Val Gln Glu Pro Ser Glu Asp Ser Glu Glu Glu Ala Pro Ala
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gtg ccc gtg gtg gtg gct gag agc cag agc gcg cgc aac ctg cgc agc   3538
Val Pro Val Val Val Ala Glu Ser Gln Ser Ala Arg Asn Leu Arg Ser
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ctg ctc aag atg ccc agc ctg ctg tcc gag acc ttc tgc gag gac ctg   3586
Leu Leu Lys Met Pro Ser Leu Leu Ser Glu Thr Phe Cys Glu Asp Leu
       1045                1050                1055

gaa cgc aag aag aag gcc gtg tcc ttc ttc gac gac gtc acc gtc tac   3634
Glu Arg Lys Lys Lys Ala Val Ser Phe Phe Asp Asp Val Thr Val Tyr
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Leu Phe Asp Gln Glu Ser Pro Thr Arg Glu Leu Gly Glu Pro Phe Pro
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ggc gcc aag gaa tcg ccc cct acg ttc ctt agg ggg agc ccc ggc tct   3730
Gly Ala Lys Glu Ser Pro Pro Thr Phe Leu Arg Gly Ser Pro Gly Ser
                1095                1100                1105

ccc agc gcc ccc aac cgg ccg cag cag gct gat ggc tcc cca aat ggc   3778
Pro Ser Ala Pro Asn Arg Pro Gln Gln Ala Asp Gly Ser Pro Asn Gly
            1110                1115                1120

tcc aca gcg gaa gag ggt ggt ggg ttc gcg tgg gac gac gac ttc ccg   3826
Ser Thr Ala Glu Glu Gly Gly Gly Phe Ala Trp Asp Asp Asp Phe Pro
        1125                1130                1135

ctg atg acg gcc aag gca gcc ttc gcc atg gcc cta gac ccg gcc gca   3874
Leu Met Thr Ala Lys Ala Ala Phe Ala Met Ala Leu Asp Pro Ala Ala
    1140                1145                1150

ccc gcc ccg gct gcg ccc acg ccc acg ccc gct ccc ttc tcg cgc ttc   3922
Pro Ala Pro Ala Ala Pro Thr Pro Thr Pro Ala Pro Phe Ser Arg Phe
1155                1160                1165                1170

acg gtg tcg ccc gcg ccc acg tcc cgc ttc tcc atc acg cac gtg tct   3970
Thr Val Ser Pro Ala Pro Thr Ser Arg Phe Ser Ile Thr His Val Ser
                1175                1180                1185

gac tcg gac gcc gag tcc aag aga gga cct gaa gct ggt gcc ggg ggt   4018
Asp Ser Asp Ala Glu Ser Lys Arg Gly Pro Glu Ala Gly Ala Gly Gly
            1190                1195                1200

gag agt aaa gag gct tga gacctgggca gctcctgccc ctcaaggctg          4066
Glu Ser Lys Glu Ala
        1205

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Leu Val Met Glu Phe Cys Pro Leu Gly Asp Leu Lys Gly Tyr Leu Arg
35 40 45

Ser Cys Arg Val Ala Glu Ser Met Ala Pro Asp Pro Arg Thr Leu Gln
50 55 60

Arg Met Ala Cys Glu Val Ala Cys Gly Val Leu His Leu His Arg Asn
65 70 75 80

Asn Phe Val His Ser Asp Leu Ala Leu Arg Asn Cys Leu Leu Thr Ala
85 90 95

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Asp Leu Thr Val Lys Ile Gly Asp Tyr Gly Leu Ala His Cys Lys Tyr
            100                 105                 110

Arg Glu Asp Tyr Phe Val Thr Ala Asp Gln Leu Trp Val Pro Leu Arg
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Trp Ile Ala Pro Glu Leu Val Asp Glu Val His Ser Asn Leu Leu Val
    130                 135                 140

Val Asp Gln Thr Lys Ser Gly Asn Val Trp Ser Leu Gly Val Thr Ile
145                 150                 155                 160

Trp Glu Leu Phe Glu Leu Gly Thr Gln Pro Tyr Pro Gln His Ser Asp
                165                 170                 175

Gln Gln Val Leu Ala Tyr Thr Val Arg Glu Gln Gln Leu Lys Leu Pro
            180                 185                 190

Lys Pro Gln Leu Gln Leu Thr Leu Ser Asp Arg Trp Tyr Glu Val Met
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Gln Phe Cys Trp Leu Gln Pro Glu Gln Arg Pro Thr Ala Glu Glu Val
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His Leu Leu Leu Ser Tyr Leu Cys Ala Lys Gly Ala Thr Glu Ala Glu
225                 230                 235                 240

Glu Glu Phe Glu Arg Arg Trp Arg Ser Leu Arg Pro Gly Gly Gly Gly
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Val Gly Pro Gly Pro Gly Ala Ala Gly Pro Met Leu Gly Gly Val Val
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Glu Leu Ala Ala Ala Ser Ser Phe Pro Leu Leu Glu Gln Phe Ala Gly
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Asp Gly Phe His Ala Asp Gly Asp Asp Val Leu Thr Val Thr Glu Thr
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Ser Arg Gly Leu Asn Phe Glu Tyr Lys Trp Glu Ala Gly Arg Gly Ala
305                 310                 315                 320

Glu Ala Phe Pro Ala Thr Leu Ser Pro Gly Arg Thr Ala Arg Leu Gln
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Glu Leu Cys Ala Pro Asp Gly Ala Pro Pro Gly Val Val Pro Val Leu
            340                 345                 350
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Ser Ala His Ser Pro Ser Leu Gly Ser Glu Tyr Phe Ile Arg Leu Glu
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Glu Ala Ala Pro Ala Ala Gly His Asp Pro Asp Cys Ala Gly Cys Ala
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Pro Ser Pro Pro Ala Thr Ala Asp Gln Asp Asp Asp Ser Asp Gly Ser
385 390 395 400

Thr Ala Ala Ser Leu Ala Met Glu Pro Leu Leu Gly His Gly Pro Pro
405 410 415

Val Asp Val Pro Trp Gly Arg Gly Asp His Tyr Pro Arg Arg Ser Leu
420 425 430

Ala Arg Asp Pro Leu Cys Pro Ser Arg Ser Pro Ser Pro Ser Ala Gly
435 440 445

Pro Leu Ser Leu Ala Glu Gly Gly Ala Glu Asp Ala Asp Trp Gly Val
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Ala Ala Phe Cys Pro Ala Phe Phe Glu Asp Pro Leu Gly Thr Ser Pro
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Leu Glu Glu Val Gly Ala Arg Arg Ala Ala Gln Arg Gly His Trp Arg
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Ser Asn Val Ser Ala Asn Asn Asn Ser Gly Ser Arg Cys Pro Glu Ser
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Trp Asp Pro Val Ser Ala Gly Cys His Ala Glu Gly Cys Pro Ser Pro
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Lys Gln Thr Pro Arg Ala Ser Pro Glu Pro Gly Tyr Pro Gly Glu Pro
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Leu Leu Gly Leu Gln Ala Ala Ser Ala Gln Glu Pro Gly Cys Cys Pro
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Gly Leu Pro His Leu Cys Ser Ala Gln Gly Leu Ala Pro Ala Pro Cys
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Leu Val Thr Pro Ser Trp Thr Glu Thr Ala Ser Ser Gly Gly Asp His
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Pro Gln Ala Glu Pro Lys Leu Ala Thr Glu Ala Glu Gly Thr Thr Gly
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Pro Arg Leu Pro Leu Pro Ser Val Pro Ser Pro Ser Gln Glu Gly Ala
625 630 635 640

Pro Leu Pro Ser Glu Glu Ala Ser Ala Pro Asp Ala Pro Asp Ala Leu
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Pro Asp Ser Pro Thr Pro Ala Thr Gly Gly Glu Val Ser Ala Ile Lys
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Leu Ala Ser Ala Leu Asn Gly Ser Ser Ser Ser Pro Glu Val Glu Ala
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Pro Ser Ser Glu Asp Glu Asp Thr Ala Glu Ala Thr Ser Gly Ile Phe
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Thr Asp Thr Ser Ser Asp Gly Leu Gln Ala Arg Arg Pro Asp Val Val
705 710 715 720

Pro Ala Phe Arg Ser Leu Gln Lys Gln Val Gly Thr Pro Asp Ser Leu
725 730 735

Asp Ser Leu Asp Ile Pro Ser Ser Ala Ser Asp Gly Gly Tyr Glu Val
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Phe Ser Pro Ser Ala Thr Gly Pro Ser Gly Gly Gln Pro Arg Ala Leu
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Asp Ser Gly Tyr Asp Thr Glu Asn Tyr Glu Ser Pro Glu Phe Val Leu
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Lys Glu Ala Gln Glu Gly Cys Glu Pro Gln Ala Phe Ala Glu Leu Ala
785 790 795 800

Ser Glu Gly Glu Gly Pro Gly Pro Glu Thr Arg Leu Ser Thr Ser Leu
805 810 815

Ser Gly Leu Asn Glu Lys Asn Pro Tyr Arg Asp Ser Ala Tyr Phe Ser
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Asp Leu Glu Ala Glu Ala Glu Ala Thr Ser Gly Pro Glu Lys Lys Cys
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Gly Gly Asp Arg Ala Pro Gly Pro Glu Leu Gly Leu Pro Ser Thr Gly
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Gln Pro Ser Glu Gln Val Cys Leu Arg Pro Gly Val Ser Gly Glu Ala
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Gln Gly Ser Gly Pro Gly Glu Val Leu Pro Pro Leu Leu Gln Leu Glu
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Gly Ser Ser Pro Glu Pro Ser Thr Cys Pro Ser Gly Leu Val Pro Glu
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Pro Pro Glu Pro Gln Gly Pro Ala Lys Val Arg Pro Gly Pro Ser Pro
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Ser Cys Ser Gln Phe Phe Leu Leu Thr Pro Val Pro Leu Arg Ser Glu
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Gly Asn Ser Ser Glu Phe Gln Gly Pro Pro Gly Leu Leu Ser Gly Pro
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Ala Pro Gln Lys Arg Met Gly Gly Pro Gly Thr Pro Arg Ala Pro Leu
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Arg Leu Ala Leu Pro Gly Leu Pro Ala Ala Leu Glu Gly Arg Pro Glu
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Glu Glu Glu Glu Asp Ser Glu Asp Ser Asp Glu Ser Asp Glu Glu Leu
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Arg Cys Tyr Ser Val Gln Glu Pro Ser Glu Asp Ser Glu Glu Glu Ala
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Pro Ala Val Pro Val Val Val Ala Glu Ser Gln Ser Ala Arg Asn Leu
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Asp Leu Glu Arg Lys Lys Lys Ala Val Ser Phe Phe Asp Asp Val Thr
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Val Tyr Leu Phe Asp Gln Glu Ser Pro Thr Arg Glu Leu Gly Glu Pro
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Gly Ser Pro Ser Ala Pro Asn Arg Pro Gln Gln Ala Asp Gly Ser Pro
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Replacement Sheet